Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band	)	ET Docket No. 13-49

COMMENTS OF
FORD MOTOR COMPANY

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Ford Motor Company (Ford), a domestic manufacturer and importer of motor vehicles with offices at One American Road, Dearborn, Michigan 48126-2798, submits these comments in response to the Public Notice issued by the Federal Communications Commission (Commission) in which the Commission seeks to update and refresh the record in the allowing of Unlicensed National Information Infrastructure ("U-NII") devices in the 5GHz Band proceeding. Ford Motor Company participated in the development of the comments submitted by the Alliance of Automobile Manufactures (Alliance) and incorporates those comments by reference.[1]

Ford is committed to making people's lives better by changing the way the world moves. We believe a truly sustainable long-term approach will require the integration of automobiles, infrastructure, and others into a single smart network. DSRC technology has the potential to be a significant enabler to this vision, by helping to making driving safer, lessening traffic congestion and reducing greenhouse gas emissions. We have been collaborating with governments and partners around the world on a number of smart mobility projects that will help develop integrated transportation models, including vehicle-to-vehicle ("V2V") and vehicle-to-infrastructure ("V2I") applications using the 5.9 GHz band for Dedicated Short Range

[1] Comments of the Alliance of Automobile Manufacturers, Inc. and Global Automakers, ET Docket No. 13-49.

Communications Service ("DSRC"). Since 2002, Ford has been actively working with the U.S. Department of Transportation (USDOT), academia, and other Original Equipment Manufacturers (OEMs) as a member of the Crash Avoidance Metrics Partnership (CAMP) and Vehicle Infrastructure Integration Consortium (VIIC) to resolve the technical and policy issues to bring DSRC technology to deployment.

The Commission's June 1, 2016, Public Notice[2] seeks to "update and refresh the record on the status of potential sharing solutions between proposed Unlicensed National Information Infrastructure (U-NII) devices and Dedicated Short Range Communications (DSRC) operations in the 5.850-5.925 GHz (U-NII-4) band." One of the purposes of this notice is to "provide interested stakeholders the opportunity to provide further comment on sharing in the band." In the "Updating and Refreshing the Record" section of the Public Notice, two sharing approaches are discussed: "Detect and Avoid" and "Re-Channelization." Comments on the merits of the two approaches are sought. Of the two sharing concepts presented in the Public Notice, the "Detect and Avoid" sharing concept, if proven to be technically feasible, is the only option that allows the use of the current DSRC system design. This approach shows promise to allow sharing in the band but needs to be validated. The Re-Channelization concept, as described in the Public Notice, would require a DSRC system redesign, thereby most likely delaying V2V safety communications deployment and potential safety benefits of V2V DSRC applications in the 5.9 GHz band.

Although Ford supports the Commission's goal of providing additional spectrum to support wireless broadband services and is fully committed to working with the proponents seeking to

[2] The Commission seeks to Update and Refresh the Record in the "Unlicensed National Information Infrastructure (U-NII) Devices in the 5GHz Band" Proceeding Docket 13-49.

allow U-NII devices to coexist with DSRC in the 5.9GHz band, the Public Notice raises concerns that could undermine the efforts of government and private sector stakeholders to allow full functionality of DSRC in the band. We agree with the Alliance that the Commission should proceed with extreme caution as it considers the substantial technical, policy, economic, and practical challenges to allow U-NII use of the 5.9 GHz band. Ford also supports the Alliance comments regarding questions about re-channelization, including issues related to cross-channel interference, adjacent channel interference, sharing in the band, and the need to expand the proposed test plan to cover the different and complex environments and conditions that need to be evaluated.

Again, Ford is open to sharing, but there are several issues with the Re-Channelization proposal that need to be more thoroughly understood, evaluated, and resolved satisfactorily before this approach may be considered a viable option. They include the following:

1. **Interference to upper channels when Wi-Fi is introduced in the lower part of the band.** Under the Re-Channelization proposal, the interference to safety-critical DSRC messages in the upper channels when Wi-Fi is introduced in the lower channels needs to be fully assessed. For example, it must be determined whether vehicle occupants' use of Wi-Fi has negative effects on the vehicle's ability to transmit Basic Safety Messages (BSM), even if BSMs are moved to the top of the band. We note the lower power levels at which DSRC operates as a basis for our concern.
2. **Adjacent channel interference when the three upper channels are used simultaneously.** As discussed in the Alliance comments, it is imperative to analyze the adjacent channel interference and cross-channel interference issues in the band, as this may result in only two channels being able to broadcast safety-critical DSRC messages in

a safe and efficient manner. Ford, through CAMP, plans on running tests with Wi-Fi in the lower part of the band and DSRC packets in the upper three channels to better understand any interference issues to help inform the decision.

3. **Sharing between Wi-Fi and DSRC in the lower part of the band.** The detailed mechanisms for sharing the channels in the lower part of the band under the Re-Channelization proposal have not been tested. While several possible protocols have been suggested for consideration by proponents of Re-Channelization, to-date, a final proposal and prototype for evaluation have not been provided.

The Commission's test plan has an aggressive timeline, starting in Phase I with bench testing and moving to small-scale and large-scale testing in Phases II and III. Moreover, Ford believes the Commission's goal of completing Phase III testing by January 15, 2017, will be difficult to achieve. At the same time, Ford has extensive DSRC test experience from bench testing to large-scale vehicle testing and may be able to assist. We are willing to work through CAMP, with other OEMs, and/or the USDOT to support the Commission in completing this important testing. The OEMs working at CAMP understand the V2V applications technical details and can assess the effects of spectrum sharing on the key metrics for these applications.

Therefore, Ford respectfully suggests the Commission not allow unlicensed U-NII use of the 5.9 GHz band unless a set of rules and test procedures can be developed that show, through rigorous bench and field testing, that 5.9 GHz DSRC systems are protected from harmful interference. Moreover, Ford, through CAMP, may be able to assist the Commission in any testing or analysis that is needed to help validate spectrum-sharing concepts and ensure the potential safety benefits of V2V applications using DSRC are realized.

Thank you for your consideration of Ford's views in this matter. If you have questions or require additional information regarding this submission, please contact Nicholas Baracos at (313) 248-2003 or nbaracos@ford.com.

Respectfully submitted,

Wayne Bahr